1.   A method for detecting an endpoint during a chemical mechanical polishing (CMP) process, comprising the operations of:

receiving a current reflected spectrum data sample corresponding to a plurality of
5   spectrums of light reflected from an illuminated portion of a surface of a wafer;

normalizing the current reflected spectrum data sample using a normalization reference comprising a first reflected spectrum data sample obtained earlier during the CMP process; and

updating the normalization reference using a second reflected spectrum data
10   sample obtained earlier during the CMP process, wherein the second reflected spectrum data sample is obtained after the first reflected spectrum data sample.

2.   A method as recited in claim 1, further comprising the operation of determining an endpoint based on optical interference occurring in the reflected spectrum
15   data.

3.   A method as recited in claim 1, wherein the first reflected spectrum data sample trails the current reflected spectrum data sample by a predetermined trailing reference delay.

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4.   A method as recited in claim 3, wherein the trailing reference delay is a number representing an amount of reflectance data samples between the current reflected spectrum data sample and the first reflected spectrum data sample.

5.   A method as recited in claim 3, further comprising the operation of receiving a new current reflected spectrum data sample corresponding to a plurality of spectrums of light reflected from the illuminated portion of the surface of the wafer at a later time.

6.   A method as recited in claim 5, wherein the second reflected spectrum data sample trails the new current reflected spectrum data sample by the trailing reference delay.

7.   A method as recited in claim 2, wherein the optical interference is a result of phase differences in light reflected from different layers of the wafer.

8.   A method as recited in claim 7, wherein the optical interference occurs when a top metal layer is reduced to a thin metal zone.

9.   A method as recited in claim 8, further comprising the operation of determining when oscillations occur in a plot of wave-numbers based on the reflected spectrum data.

5   10.   A method as recited in claim 9, wherein the endpoint occurs when the oscillations in the plot of wave-numbers occurs.

          11.   A method for detecting an endpoint during a chemical mechanical polishing (CMP) process, comprising the operations of:

10   receiving a current reflected spectrum data sample corresponding to a plurality of spectrums of light reflected from an illuminated portion of a surface of a wafer;

          selecting a first median reflected spectrum data sample from a first plurality of reflected spectrum data samples obtained earlier during the CMP process;

          normalizing the current reflected spectrum data sample using a normalization
15   reference comprising the median reflected spectrum data sample; and

          updating the normalization reference using a second median reflected spectrum data sample selected from a second plurality of reflected spectrum data samples obtained earlier during the CMP process.

12. A method as recited in claim 11, further comprising the operation of determining an endpoint based on optical interference occurring in the reflected spectrum data.

5   13. A method as recited in claim 11, wherein the first plurality of reflected spectrum data samples comprise three consecutive reflected spectrum data samples obtained earlier during the CMP process.

14. A method as recited in claim 13, wherein one of the first plurality of
10   reflected spectrum data samples trails the current reflected spectrum data sample by a predetermined trailing reference delay.

15. A method as recited in claim 14, wherein the trailing reference delay is a number representing an amount of reflectance data samples between the current reflected
15   spectrum data sample and one of the first plurality of reflected spectrum data samples.

16. A method for detecting an endpoint during a chemical mechanical polishing process, comprising the operations of:

illuminating a portion of a surface of a wafer with broad band light;

receiving a current reflected spectrum data sample corresponding to a plurality of spectrums of light reflected from the illuminated portion of the surface of the wafer;

normalizing the current reflected spectrum data sample using a normalization reference comprising a first reflected spectrum data sample obtained earlier during the CMP process;

determining an endpoint based on optical interference occurring in the reflected spectrum data; and

updating the normalization reference using a second reflected spectrum data sample obtained earlier during the CMP process, wherein the second reflected spectrum data sample is obtained after the first reflected spectrum data sample.

17.   A method as recited in claim 16, wherein the first reflected spectrum data sample trails the current reflected spectrum data sample by a predetermined trailing reference delay.

18.   A method as recited in claim 17, wherein the trailing reference delay is a number representing an amount of reflectance data samples between the current reflected spectrum data sample and the first reflected spectrum data sample.

19.   A method as recited in claim 18, further comprising the operation of receiving a new current reflected spectrum data sample corresponding to a plurality of spectrums of light reflected from the illuminated portion of the surface of the wafer at a later time.

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20.   A method as recited in claim 19, wherein the second reflected spectrum data sample trails the new current reflected spectrum data sample by the trailing reference delay.